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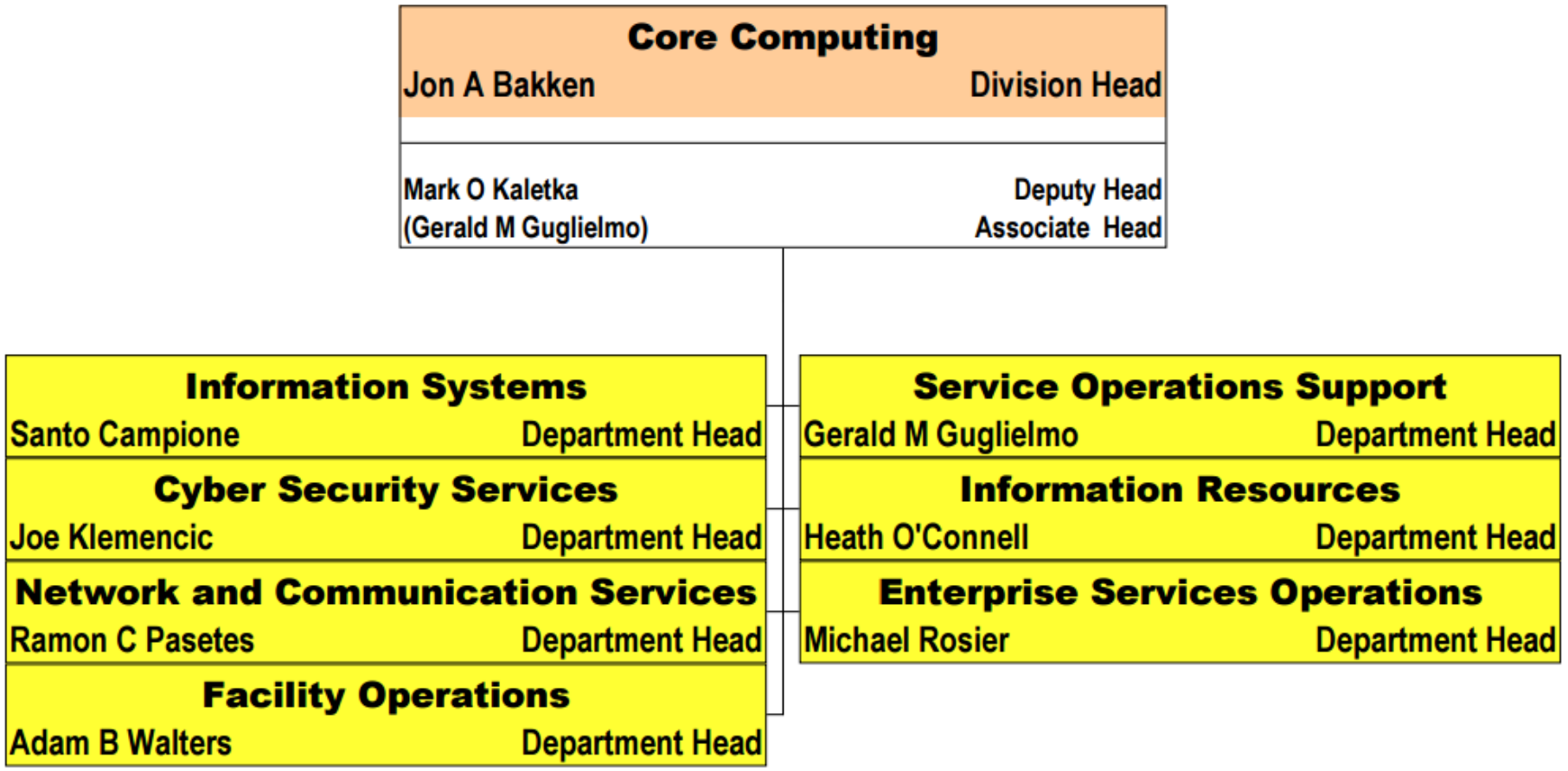
Overview of the CCD/ESO Unix (Linux) Server Services Group

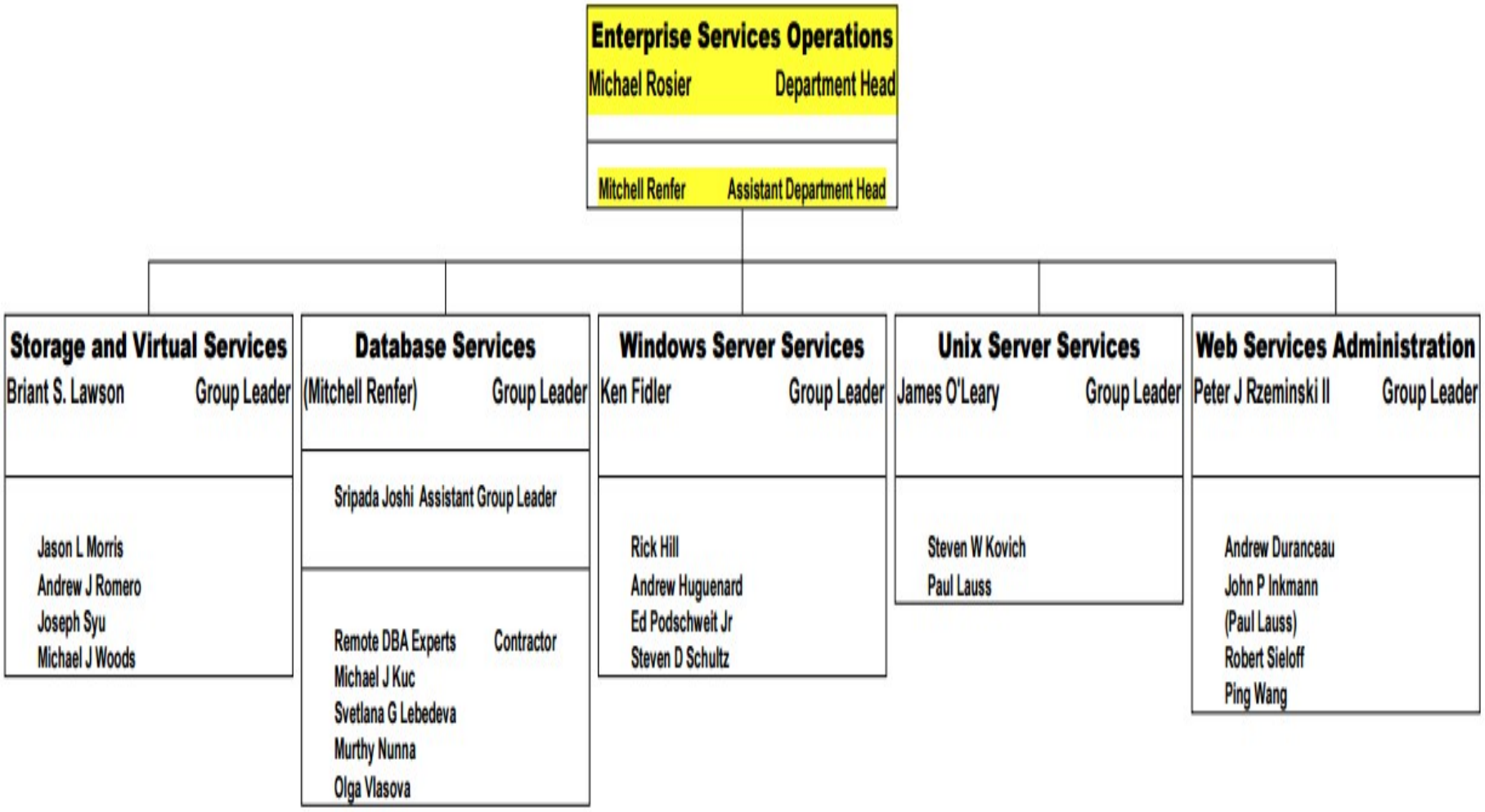
Jim O'Leary

11/18/2015

Core Computing Division

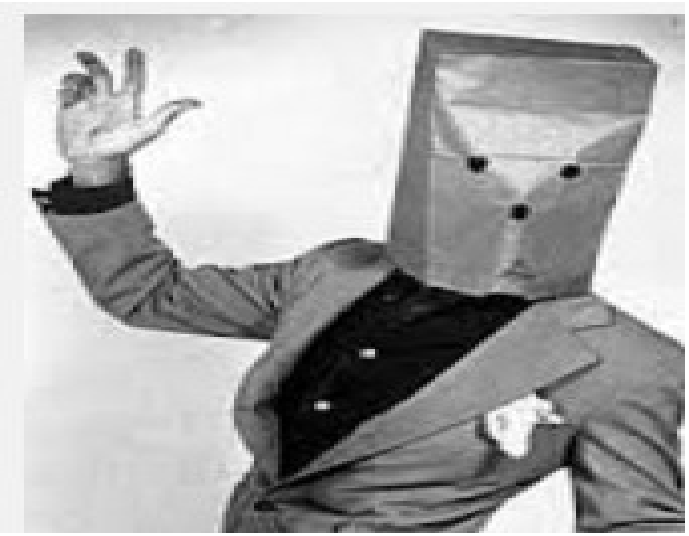


Enterprise Services Operations Department



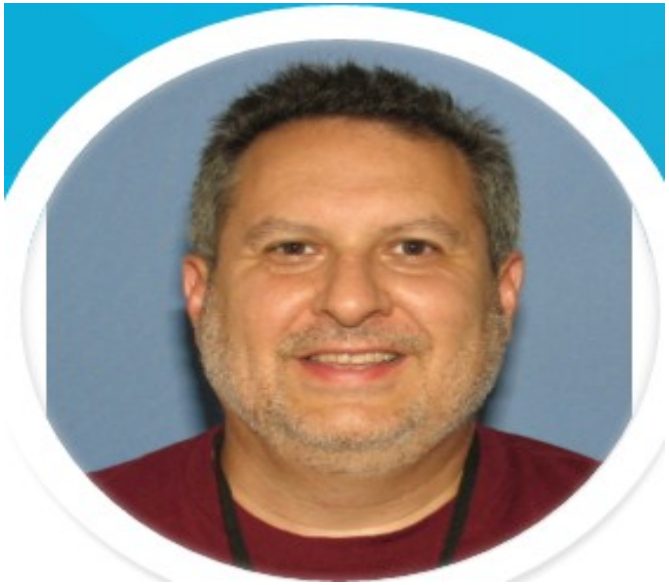
CCD/ESO Group Members

- Jim O'Leary



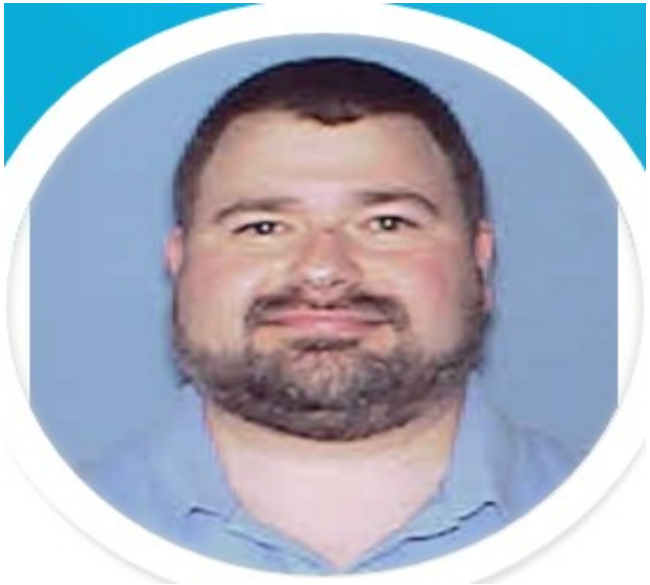
ESO/USS Group

- Steven Kovich



ESO/USS Group

- Paul Lauss



USS Primary Customers

- ESO Database Services Group
  - Business/Finance Oracle Database and Application Servers
    - Oracle E-Business Suite (Procurement)
    - PeopleSoft (Payroll, for now)
    - Sunflower (Inventory)
    - CNAS (Central Name and Address Service)
    - Procard (credit card management)
    - Promise (project management)
    - CA Harvest Source Code Management
    - ESH&Q
    - TeamCenter (engineering)
    - MISCOMP (Miser, Leave, Misnet, EquipDB…)

USS Primary Customers

- ESO Database Services Group
  - Scientific and Miscellaneous Postgres Databases
    - Multi-Purpose Postgres
    - Nova SAM databases
    - Tissue / FBI / NCIS
    - Minerva
    - Older Intensity Frontier / CDF / D0 databases
  - Scientific and Miscellaneous MySQL Databases
    - Multi-Purpose MySQL
    - Intensity Frontier
    - MariaDB / Galera General Purpose MySQL cluster

USS Primary Customers

- ESO Web Services Administration Servers
  - New Central Web Service
  - Old Central Web Service (soon gone)
  - New Wordpress SAAS service (Mariadb/Galera)
  - New Twiki Service

- ESO Storage Network Services Servers
  - EMC Networker backups (Financial)
  - TiBS backups (general purpose server backups)
  - AFS (slated for removal in 2016)

USS Customers

- Miscellaneous Servers
  - CCDCVS / Redmine repositories
  - Wireless guest registration
  - Tissue/FBI/NCIS applications
  - FNALU General purpose Linux cluster
  - Indico event planning
  - Spires scientific document tracking
  - JSS Casper – Apple desktop management for lab
  - MRTG / Nodelocator – network management tools
  - Secunia server for AD
  - FNPRT Linux print server

USS Infrastructure

- USS administers about 200 servers:
  - Red Hat Enterprise Linux:

Operating System	Total System Count	VM Count
RHEL 3.0.9	0	0
RHEL 4	7	5
RHEL 5.9	0	0
RHEL 5.10	1	1
RHEL 5.11	30	19
RHEL 6.4	1	1
RHEL 6.5	0	0
RHEL 6.6	39	34
RHEL 6.7	71	62
RHEL 7.0	0	0
RHEL 7.1	12	12
All RHEL	**164**	**137**

Flat rate license for VMs on a VMware ESX hosts reduces costs

USS Infrastructure

- USS administers about 200 servers
  - SLF and Solaris (mostly legacy):

Operating System	Total System Count	VM Count
SLF 4	0	0
SLF 5.9	0	0
SLF 5.10	0	0
SLF 5.11	14	7
SLF 6.4	6	6
SLF 6.5	0	0
SLF 6.6	0	0
SLF 6.7	1	1
SLF 7.0	0	0
SLF 7.1	0	0
All SLF	**21**	**14**
SOLARIS 5.9	0	0
SOLARIS 5.10	18	3
SOLARIS 5.11	0	0
All SOLARIS	**18**	**3**

We hope to eliminate most or all Solaris Servers in CY2016

USS Infrastructure

- 75% of our servers are VMWare VMs provided by the ESO Virtual Services group. We are striving for 90% VMs by end of CY2016.

- Most of our servers store their application/database information on SAN and NAS services provided by the ESO ESO Storage Network Services Group

- All of our servers depend on backup services (EMC Networker, TiBS, VEEAM) provided by the ESO Storage Network Services Group.

USS Infrastructure

- ESO/USS ***Loves*** and depends on the ESO Storage and Virtual Services Group!

  Thanks to their great services, we get more beauty sleep.

USS Infrastructure

- 25% percent of our servers run on real hardware (mostly very old legacy), some employing locally attached disk. We hope to P2V most of these to VMs in CY2016.
- USS Utility servers
  - Red Hat Satellite management server
    - Running Satellite 5.6 – migrating to Satellite 6.1 in CY2016
  - Puppet 2.6
    - Plan to migrate to puppet that is integrated with RH Satellite 6
  - Check_MK monitoring (auto Service Now INCs/Paging)
    - Hope to start moving into Ed Simmonds' Check_MK service soon
  - Tripwire Enterprise – monitors financial servers

USS Biggest Challenges

- Trying to do more with less people
  - OS patching
    - **Must patch all Financial servers monthly**
    - **Must patch all other servers (RHEL/SLF/Solaris) quarterly**
      - Have worked with all customers to develop pre-agreed patching schedules.
      - Patching schedule announcements and reminders are sent automatically.
      - We hope to automatically submit formal Service Desk patching Communications (via SNOW) in 1Q CY16.
      - We plan to start automating actual patching/reboot/post-patch-esting and monitoring in February, starting with Central Web

USS Biggest Challenges

- Keeping up with the work load
  - Managed 130 servers in 2013, but 200+ servers today
  - 583 Incidents processed in 2015 (about half are real work)
  - 209 Request items processed in 2015

    - Hoping to employ contracted assistance of external sysadmin service (same service used by DBAs)

USS Conclusion

- We work very closely with our customers to design, build, manage and maintain multiple servers that are critical to the daily functioning of Fermilab.

- We're basically middlemen. We're not sexy. We don't often get mentioned Jon Bakken's newsletter. But we do play an important role in keeping the lab running - with a very small group.

- Questions?